Industry Canada Industrie Canada

WORKING PAPER SERIES / COLLECTION DOCUMENTS DE TRAVAIL

CANADIAN POLICY RESPONSES TO OFFSHORE OUTSOURCING

Daniel Trefler, University of Toronto

Working Paper 2009-01

Canada

The Economic Research and Policy Analysis Branch's Working Paper Series is intended as a means of diffusing research findings from Industry Canada projects for discussion and comment.

Working Papers are circulated in the language in which they were written. The papers reflect the views of the authors and no responsibility for them should be attributed to Industry Canada or the federal government. Comments on the papers are invited and may be sent directly to the authors.

La série Documents de travail de la Direction générale de la recherche économique et de l'analyse des politiques se veut un moyen de diffuser les résultats des recherches issues des projets d'Industrie Canada dans le but de favoriser la discussion et la réception d'observations.

Les documents de travail sont diffusés dans la langue dans laquelle ils ont été écrits. Les opinions qui y sont exprimées sont celles des auteurs et n'engagent pas Industrie Canada ou le gouvernement fédéral. Le lecteur est prié de faire part de ses commentaires aux auteurs.

Working Paper Series / Collection Documents de travail

CANADIAN POLICY RESPONSES TO OFFSHORE OUTSOURCING

Daniel Trefler, University of Toronto

Working Paper 2009-01

IC 60543

To obtain copies of documents published under the Working Paper Series, please visit: http://www.ic.gc.ca/epic/site/eas-aes.nsf/en/h_ra01967e.html or contact:

Publications Coordinator
Micro-Economic Policy and Analysis
Industry Canada
10th Floor, East Tower
235 Queen Street
Ottawa, Ontario K1A 0H5

Tel.: (613) 952-6411; Fax.: (613) 991-1261
E-mail: erpa-reap@ic.gc.ca

Pour obtenir des exemplaires des documents publiés dans la collection des documents de travail, cliquer sur : http://www.ic.gc.ca/epic/site/eas-aes.nsf/fr/h_ra01967f.html ou s'addresser à :

Coordinatrice des publications
Analyse de la politique micro-économique
Industrie Canada
10e étage, tour Est
235, rue Queen
Ottawa (Ontario) K1A 0H5

Tél.: (613) 952-6411; Fax.: (613) 991-1261
Courriel: erpa-reap@ic.gc.ca

Abstract

This policy brief is a summary of the views on offshore outsourcing expressed by Canadian and international thought leaders at two conferences co-organized by Industry Canada and the Rotman School of Management. The "Roundtable on Offshoring" was held on March 30, 2005 at the Chateau Laurier, Ottawa and led to the commissioning of 16 new studies that fully describe all that is relevant to Canadian policy makers about the rise of offshore outsourcing. The papers were then presented at a conference held on October 26-27, 2006 at the Rotman School of Management, University of Toronto.

From these papers and the lively conference debates comes a comprehensive inventory of possible policy responses to the rise of offshore outsourcing. These policies are reviewed here and the effectiveness of each is evaluated. Section 4 of the paper is particularly important as it presents the most effective policies, namely, those that are proactive. The key proactive issue is Canada's ability to sell innovative products abroad. This ability is being threatened by increased offshore outsourcing to low-wage countries such as China and India and the threat will become a major one if and when these low-wage countries become major innovators. The right policy mix must address Canada's current innovation gap.

Key words: offshore outsourcing, innovation, competitiveness

Résumé

Le présent document résume les points de vue sur cette pratique commerciale exprimés par différents visionnaires canadiens et étrangers lors de deux conférences organisées par Industrie Canada et la Rotman School of Management. Une table ronde sur l'externalisation a eu lieu le 30 mars 2005 au Château Laurier à Ottawa et a mené à la réalisation de 16 nouvelles études ayant pour objectif de dégager tous les aspects pertinents de la montée de l'externalisation afin d'orienter les décideurs canadiens. Les rapports ont ensuite été présentés lors d'une conférence qui s'est déroulée les 26 et 27 octobre 2006 à la Rotman School of Management de l'Université de Toronto.

Ces rapports et les débats animés qu'ils ont soulevés ont permis de dresser une longue liste de solutions possibles pour réagir à l'essor de l'impartition à l'étranger. L'objectif du présent document est de passer ces solutions en revue et de les évaluer. La section 4 présente un intérêt particulier, car elle met en lumière les meilleures stratégies, c'est-à-dire celles qui ont une visée proactive. L'enjeu majeur est la capacité du Canada à vendre des produits novateurs à l'étranger, atout qui est menacé par l'essor de l'impartition à des pays à bas salaires comme la Chine et l'Inde. Cette menace deviendra un problème majeur si ces pays deviennent d'importants innovateurs. C'est pourquoi il est crucial de se doter d'une série de mesures qui comblera le retard actuel du Canada en matière d'innovation.

Mots clés : l'impartition à l'étranger, innovation, compétitivité

Daniel Trefler
University of Toronto and
Canadian Institute for Advanced Research

1

Canadian Policy Responses to Offshore Outsourcing

EXECUTIVE SUMMARY

AS A POLICY MAKER, it is hard not to be drawn into the hysteria surrounding the rise of China as the world's manufacturer and of India as the new capital of outsourced services. While cries for a dramatic government response are everywhere, panic is the wrong mindset. The impacts to date have been smaller than one might think, especially in services. In addition, there is a very limited set of short-run policy fixes that can address the most significant looming issue, namely, the slow but steady rise in the innovative capacities of China and India.

This policy brief summarizes the results of a major collaborative research program by Industry Canada* and the Rotman School of Management at the University of Toronto on possible responses to offshore outsourcing. The brief provides a comprehensive inventory of proposed policies and evaluates the effectiveness of each. Table 1 summarizes the approach adopted here. The column labelled "Today's problems" outlines current thinking about the rise of offshore outsourcing. It is focused on reacting to the lost jobs from cost-based competition for standardized products. The column labelled "Tomorrow's crisis" reorients the discussion to what matters most, namely, retaining and creating good jobs through innovation. Creating these jobs requires one to adopt a long-run proactive mindset which recognizes that good jobs come from sustained innovation and that innovative companies will not be brought down by low-wage competitors. The proactive mindset also recognizes that high-value-

* The views expressed in the papers produced under the program reflect those of the authors and not those of Industry Canada or the Government of Canada.

added jobs are created by a federal government that encourages workers and firms to invest in their innovative capacity. This is the basis for the following assessment of possible policy responses to offshore outsourcing.

TABLE 1

REACTIVE AND PROACTIVE RESPONSES OF OFFSHORE OUTSOURCING

	Today's problems	Tomorrow's crisis
Threats	Cost-based competition from China and India	Innovation-based competition from China and India
Responses	Reactive	Proactive
Goals	Protect existing jobs and firms	Create tomorrow's good jobs and global firms through innovation
Policies	Complain, devalue and subsidize hard-hit firms*	Help workers and firms invest in their future innovative capacity

* This brief will also offer suggested solutions that could satisfy public demand for action but these would not be nearly as effective as investing in future innovative capacity.

REACTIVE POLICIES THAT WILL NOT WORK

Canada cannot prevent China and India from continuing to integrate into Asian supply chains. Nor can it force China to revalue its currency. The public should be educated about these realities.

Canada should not respond with trade restrictions, industrial targeting or buy-Canadian procurement programs. All of these are costly to consumers and taxpayers. They are also reactive ways of sheltering the economy from competition rather than proactive ways of promoting sustained, innovation-based, competitive advantage.

REACTIVE POLICIES THAT MAY HELP

Product market policies. These include (i) better protection of Canadian intellectual property from abuse by foreign manufacturers; (ii) tax incentives for R&D–intensive firms that remain in Canada; and

(iii) improved health and safety compliance for foreign goods sold in Canada.

Labour market policies. These include (i) continued support for our health care system; (ii) increased portability of pensions; and (iii) support for voluntary labelling that provides information to consumers on the labour standards used to produce foreign goods.

Public education about the benefits of offshore outsourcing. Some in the general public exaggerate the job costs of offshore outsourcing and underestimate the benefits. For example, the public seems to like the fact that lowering the Goods and Services Tax to 5 percentage points makes a $1,000 television set $30 cheaper. The public should like even more the fact that outsourcing makes the same television set $200 cheaper without costing Canadians a single job.

PROACTIVE POLICIES FOR SUSTAINED, INNOVATION-BASED, COMPETITIVE ADVANTAGE

Helping people invest in themselves

No single policy is more effective in creating an innovative climate than enhanced education at all levels, starting with pre-school and continuing through to advanced university degrees. Every analyst agrees on this point, both academics and businesspersons (e.g. Canadian Chamber of Commerce, McKinsey and Morgan Stanley).

Helping firms invest in their innovative capacity

- **Investment incentives**. Canadian underinvestment in machinery and equipment, especially in information and communication technologies, is now well established as one of the key reasons for Canada's poor record on productivity growth. Yet some government tax policies may discourage business investment. For example, low capital cost allowance rates, provincial capital taxes, provincial sales taxes on business inputs and decisions to lower consumption taxes rather than lowering investment taxes contribute to Canada having the OECD's third highest marginal effective tax rate on capital. As emphasized in *Advantage Canada*, all levels of government must work harder to encourage rather than discourage business investment.

- **Increasing the size of the market in which Canadian firms operate**. New products and processes require up-front development costs. The larger the market in which the firm operates, the smaller these development costs are relative to sales. Thus a larger market encourages higher rates of investment. To increase our market size, we must eliminate interprovincial trade barriers; improve access to the United States, Europe and Asia; and reduce East Asian barriers against our service providers. Other infrastructure investments that could indirectly increase our markets include improved through-put at the U.S. border, an expanded second port on the west coast and enhanced telecommunications capacity. These recommendations are all consistent with the objectives outlined in *Advantage Canada*.

- **Provide subsidies for innovation and the retention of knowledge workers**. Canadian rates of business R&D are among the lowest in the OECD. There are two R&D investment issues that are specific to offshore outsourcing. First, some analysts advocate the use of R&D taxes and subsidies to encourage Canadian firms to stay in Canada rather than give away their technology in joint ventures with Chinese firms. Second, to maintain a competitive edge, firms must invest in "excess capacity" of innovation-related workers so that the firms can flexibly advance into evolving lines of business. Firms must retain engineers and scientists even after their current projects have been outsourced. Canada should consider providing incentives for firms to retain R&D-related personnel so as to take a long view of product development.

To summarize, the right policy response to offshore outsourcing proactively promotes sustained, innovation-based, competitive advantage. It does so by helping students, workers and firms invest in their future innovative capacity.

INTRODUCTION

THE RISE OF CHINA as the world's manufacturer and of India as a major offshore outsourcer of services is creating new stresses on the Canadian economy. In the hyped-up atmosphere surrounding the rapid growth of offshore outsourcing, Canadian policy makers have been pressured to react. Recognizing that policies conceived in a reactive mode are rarely the best policies, Industry Canada wisely initiated a consultative process to generate new ideas for how to get ahead of the problem and develop proactive policies that allow Canada to benefit from offshore outsourcing. This policy brief is a summary of the views on offshore outsourcing expressed by Canadian and international thought leaders at two conferences co-organized by Industry Canada and the Rotman School of Management. The "Roundtable on Offshoring" was held on March 30, 2005, at the Chateau Laurier, Ottawa, and led to the commissioning of 16 new studies that fully describe all that is relevant to Canadian policy makers about the rise of offshore outsourcing. The papers were then presented at a conference held on October 26–27, 2006, at the Rotman School of Management, University of Toronto.

From these papers and the lively conference debates comes a complete inventory of possible policy responses to the rise of offshore outsourcing. These policies are reviewed here and the effectiveness of each is evaluated. Section 1 of this policy brief presents the salient facts about offshore outsourcing. Only those facts that are absolutely essential for evaluating policy responses are presented. Policy responses and an assessment of their effectiveness appear in Sections 2 to 4.

Section 4 is particularly important as it presents the most effective policies, namely, those that are proactive. As should be apparent from the Executive Summary, the key issue is Canada's ability to sell innovative products abroad. This ability is being threatened by increased offshore outsourcing to low-wage countries such as China and India and the threat will become major if and when these low-wage countries become major innovators. The right policy mix must address Canada's current innovation gap.

The views expressed here are profoundly influenced by the 16 conference papers and the surrounding conference discussions. In arriving at these conclusions, I have been helped enormously by Someshwar Rao and Prakash Sharma of Industry Canada; Steve Arenberg, Wendy Dobson and Roger Martin of the Rotman School of Management; Jim Milway of the Institute for Competitiveness & Prosperity; and Elhanan Helpman of the Canadian Institute for

Advanced Research (CIFAR). I am grateful for their help and encouragement.

Facts and Confusions about Offshore Outsourcing

Canada is one of the richest economies in the world and is currently facing historically strong labour market conditions in the form of low unemployment rates and high participation rates. We have thus successfully leaned into the headwinds of globalization. Unfortunately, globalization brings with it intense pressures to improve or fall behind and there is a legitimate concern that we are falling behind. In the context of offshore outsourcing, the following three concerns are especially important:

- **Concern 1.** The purchase of high-end services from Indian companies that employ low-wage and highly educated Indian workers threatens the salaries and jobs of highly paid white-collar Canadians.
- **Concern 2.** The Chinese product invasion will kill off large numbers of high-paying, blue-collar manufacturing jobs in Canada.
- **Concern 3.** Over the long term (15–20 years), world leadership in innovation may migrate away from medium-sized OECD innovators such as Canada toward low-wage China and India.

The key recommendations of this policy brief flow from the possibility that Concern 3 may materialize. Whether it materializes depends in part on China and India's ability to replace their existing institutions with more pro-innovation institutions. Should China and India do so, the implications for Canada would be severe. For example, within 15–20 years, China could overtake Canada in R&D expenditures as a share of GDP (leaving Canada in 16th place internationally). We could either spend the next two decades doing nothing while waiting to see whether such a global shift in innovation toward China and India actually happens. Or recognize that Canada's tenuous position as a world-class innovator has been steadily eroding and a global innovation shift toward China and India would only accelerate the process. Stated this way, the choice is clear. We must focus our policy resolve on long-term framework policies that promote the ability of Canadian students, workers and firms to invest in themselves today in order to compete globally tomorrow. *The problem for policy makers is to address our long-term innovation deficit with a focused, long-term response aimed*

at re-establishing Canada as one of the top-10 world leaders in innovation and knowledge creation.

What of the first two concerns listed above? We review these next.

OFFSHORE OUTSOURCING OF ICT AND BUSINESS SERVICES

Offshore outsourcing of business services and ICT (information and communications technologies) to low-wage countries such as India is to date a minor phenomenon for Canada. Canada exports as much in outsourced services as it imports so there is no significant trade imbalance. Also, 85 percent of our trade in outsourced services is with other OECD countries so we are not primarily in competition with low-wage countries. That said, offshore outsourcing by India and other low-wage countries is growing at a spectacular rate. Fortunately, research presented at our offshore outsourcing conferences clearly indicates that firms from low-wage countries will not be stealing many white-collar jobs from Canada. There are four reasons for this surprising conclusion. While all four are in the context of India, they apply equally to other low-wage countries.

First, conference contributor Ashish Arora (2009) argues that, contrary to all the hype, India provides primarily low-end ICT and business services typified by call centres, data entry and payroll management. Arora supports this with hard data on sales figures and patents.

Second, to the extent that India is able to migrate up the value chain and provide sophisticated business services, this will not threaten Canadian white-collar jobs. The reason was explained at the conference by N. Chandrasekaran, Executive Vice President and Global Head of Sales and Operations for Tata Consultancy Services (TCS), India's largest offshore service provider. When TCS provides high-end services to Canadian customers, it does so by seamlessly embedding its workers within the operations of its Canadian customers. Who are the most qualified workers to do this? Young Canadian managers who are hired by TCS, receive additional training by TCS in Kerala and then return to Canada as "embedded" workers. The job threat to Canadians is thus minimal.

Third, the claim that India has an endless supply of qualified engineers ready to steal away Canadian jobs is inconsistent with evidence presented by conference participant Ashish Arora (2009) on the quality and quantity of Indian engineers. The claim is also not supported by a recent McKinsey Global Institute (2005) report which finds that only one in four graduates of Indian engineering schools is qualified to work in the offshore outsourcing sector. The report goes on

to argue that wages in the sector will likely rise dramatically to levels seen in Brazil, thereby significantly eroding India's competitive advantage.

Fourth, we now have hard evidence on white-collar job losses due to service offshoring to India and other low-wage countries. The two studies commissioned for the conference — one by Morissette and Johnson (2009) for Canada and one by Liu and Trefler (2006) for the United States — found incredibly small job impacts. This actually is not that surprising. Even the large guesstimates of job losses due to the offshore outsourcing of business services represent only a tiny fraction of the number of jobs that are lost daily in a healthy economy.[1]

To summarize, the data show that concerns about the effects of the offshore outsourcing of business services to low-cost countries such as India are greatly exaggerated.

Offshore outsourcing in manufacturing

There is no doubt that China is having a negative impact on Canada. Canadian manufacturing employment has shed 10 percent of its workforce (230,000 jobs) since its peak in 2004. Is this due to China? In Alberto Isgut's (2009) contribution to the conference, he finds that the increase in imports from China since 2000 has cost Canadian manufacturing only 30,000 jobs. Morissette and Johnson's (2009) conference contribution arrives at a slightly smaller number. However, as both studies use pre-2004 data, the conclusion must be that Chinese competition was not harmful *before* 2004.

Unfortunately, Chinese competition has likely been more harmful since 2004. No one knows for sure because the recent appreciation of the dollar has also had an adverse impact on manufacturing. Conference contributors Brandt and van Biesebroeck (2006) and Sturgeon, van Biesebroeck and Gereffi (2007) argue that the biggest concern for the health of manufacturing comes from the automotive sector. On the optimistic side, this sector cannot migrate easily to China or India because it requires the coordinated migration of the entire supply chain, i.e., hundreds of parts suppliers. On the pessimistic side, China and India's huge internal markets for autos have allowed their domestic producers to develop an extensive domestic supply chain. The time when high-quality cars can be built in China or India is rapidly approaching. This realistic scenario would be highly disruptive for Ontario and Quebec. For future reference, I emphasize that at the heart of the problem is (i) the large domestic Chinese and Indian markets; and (ii) the innovative potential of Chinese and Indian auto manufacturers, i.e., their ability to produce not just cheap cars but cars that appeal to demanding North American consumers.

In thinking about responses to low-wage competition in manufacturing, there is a key aspect that has been neglected to date which bears heavily on issues of innovation-based competitiveness. One must distinguish between the value of goods shipped to us from China and the value added by China to those goods as the goods move through global supply chains. "Value added" is the sum of wages, profits and the return to talent (talent being those designers and managers who receive generous bonuses and stock options for their efforts). As noted in Helpman and Trefler's (2009) conference contribution, high-tech and time-sensitive goods now imported from China were once imported directly from Japan and the other Asian Tigers, e.g. South Korea, Taiwan, Hong Kong and Singapore. For example, the Asian Tigers once shipped vast amounts of consumer electronics to Canada. They now ship vast amounts of electronics parts to China ($80 billion of electronic integrated circuits and microassemblies in 2005) where they are assembled and shipped to Canada. In fact, in one very important sense, the pattern of world trade has not changed all that much since the early 1990s. Most of the value added in goods shipped from China to Canada is value added that was created in Japan and the other rich Asian Tigers. Helpman and Trefler show that between 1993 and 2003, the growth of the U.S. trade deficit with China largely reflected a shift in the U.S. trade deficit from the Asian Tigers to China as China was brought into the Asian supply chain.[2]

Once we are thinking about value added, some interesting new facts come to light. Value added in manufacturing typically moves hand in hand with employment. However, since 2000, Canadian manufacturing value added has held its own despite large employment declines. This is an historical first. While the reasons for it are complex, the main message is clear: Canadian firms and Canadian talent are generating innovative new products and processes that command a unique market position, a position that translates into sustained high levels of value added. Policy responses to the rise of China must be directed toward helping Canadian firms and Canadian talent generate value through innovation.

THE INNOVATION TIPPING POINT OF INSTITUTIONS AND SOPHISTICATED CONSUMERS

The 64,000 job question is whether China, India and other low-wage countries will become innovation powerhouses over the next 15–20 years. No one can know the answer to this but history provides some guidance.

The role of institutions

It is now widely recognized among academic economics that institutions are a fundamental determinant of long-term growth. This view is summarized in Helpman (forthcoming) which reports the results of a decade of research on the topic by researchers at CIFAR. A number of conference participants (Arora 2009; Dobson 2006*a*,*b*; Helpman and Trefler 2009) noted that there are significant institutional impediments to sustained innovation-based growth in China and, to a lesser extent, India. Buying and/or copying OECD technology is one thing. Developing new technologies requires an entirely different palette with a delicate backdrop painted in two colours. The first is property-right institutions that protect investors from predatory governments. The second is legal and business forms that mobilize the capital of those who have it and direct it in *arm's length* transactions to those who need it, without concern that the capital will be stolen in Enron-like scams. More specifically, OECD institutions that sustain innovation include a transparent and accessible legal system, a financial system (banks, equity markets, etc.) that is not overly subject to abuse by insiders and government officials, and a national innovation system that supports creativity (patent offices, informed patent courts, universities, etc.). China is far from having these OECD institutions. For example, Dobson and Kashyap (2006) report that the Chinese banking system remains largely under the control of politicians who force bankers to misallocate scarce capital to inefficient state-owned enterprises. The same applies to the use of export subsidies (Girma et al. 2007). Most recently, tainted food exports and mislabelled pharmaceuticals remind us of the very limited amount of Chinese government oversight over health and safety, two functions of government that are viewed as crucial in the OECD. These shortcomings of Chinese institutions are not things that can be transformed overnight.

What does this all mean? While the rise of Chinese manufacturing will impose significant adjustment costs on Canada, these should not be overstated. It is not until China puts its institutions in order that China will enter as a full partner in the world economy. No one knows how long such a Chinese institutional transformation will take. But it will be at least 15–20 years. If and when it happens, China will become a real threat ... and a real opportunity.

The role of sophisticated consumers

To date, China and India have spun off almost no world-class, innovative businesses. As just noted, one reason for this is that these countries do not have the innovation-sustaining institutions in place. Another reason is that innovative firms need to be close to where the most sophisticated customers are if they want to respond rapidly to customer needs. The most sophisticated customers have always been in the OECD. But as China and India become richer, some of those sophisticated customers are springing up in these countries. Already there are innovations directed at Chinese customers, such as Nokia's Chinese-character text messaging.

When Chinese and Indian innovation-sustaining institutions are in place and there are enough sophisticated customers located in Shanghai and Mumbai to support innovative domestic firms, then the global economy will have arrived at an *innovation tipping point*. Once past the innovation tipping point, world leadership in innovation will migrate away from medium-sized OECD innovators such as Canada and toward low-wage China and India. When this happens, China and India will have unglued themselves from their past and become significant competitors to every profitable corporation in the industrialized world. Reactive policies will not prevent this but proactive policies can.

Once past the innovation tipping point, medium-sized OECD innovators such as Canada will be severely challenged and tested in the World Innovation Club and their membership cards passed on to China and India. When this happens, China and India will have unglued themselves from their past and become significant competitors to every profitable corporation in the industrialized world.

Reactive Policies That Will Not Work

As I hope the above discussion has brought home, the essence of our long-term concerns must be our ability to compete in the realm of new products and processes. With this lens in mind, I will go through a complete list of proposed policy recommendations and highlight those that are most useful, i.e., directly address issues of innovation.

It must be recognized that many of the economic developments in China and India which make these countries so attractive for offshore outsourcing are beyond the influence of Canadian public policy. China and India have huge domestic markets with growing enclaves of affluence. They are therefore magnets of opportunity that draw foreign firms to the region. In addition, China and India are already integrated into the Asian supply chain, a supply chain dominated and controlled by the Asian Tigers, especially Japan. With or without North American involvement, supply chains in the region will continue to deepen, improve and reduce costs. They will therefore create greater and greater pressures on Canadian manufacturing to relocate there. Canada can do nothing to stop the development of Asian supply chains. The public must be educated to the fact that the rise of Asian supply chains is a reality.

It would help somewhat if China were forced to revalue its currency by 40 percent as many U.S. lawmakers have requested. But it is estimated that this would drive up Chinese costs at the most by 20 percent.[3] Therefore, Chinese revaluation of 40 percent is not a panacea. A far larger, but politically impossible, revaluation would be needed. Canada can push for some currency realignment within the G8 framework, but ultimately pressure from other countries such as the United States, Germany and Japan will be needed.

What not to do: Trade restrictions, industrial targeting and buy-Canada government procurement programs

There is a large number of smart economic commentators who have publicly articulated the perils of offshore outsourcing. Among these are Nobel Prize winner Paul Samuelson and Princeton Professor Alan Blinder. Yet these distinguished commentators have clearly and explicitly stated that retreating from freer trade is an untenable policy response to offshore outsourcing. Samuelson (2004) writes that "tariffs are the breeder of economic arteriosclerosis" and Blinder (2006) writes, "Let's start with what we should *not* do but will be sorely tempted to try: building protectionist barriers against the threat of offshoring."

Another comment that was periodically voiced at our offshore outsourcing conferences is the need for industrial targeting, i.e., picking winners. It was pointed out that Japan was and China is very successful at this and we should follow suit. There is in fact considerable debate about whether Japan's success (and current failure) had anything to do with industrial targeting. Certainly, Japan's Ministry of International Trade and Industry (MITI) made many costly mistakes. More to the point, Chinese industrial targeting is in the context of a communist political system. That political system has consistently and disproportionately directed financial resources toward politically connected state-owned enterprises, the very enterprises that are widely viewed as the biggest drag on the economy (see Girma et al. [2007]). The politics of industrial targeting in China is perceived by many as nothing short of a failure. Likewise, Indian success in the ICT-related sector came about because of the *lack* of government intervention. These points appear in work by conference participants Wendy Dobson (Dobson and Kashyap 2006) and Ashish Arora (Arora and Gambardella 2005). *Industrial targeting is a bad idea.*

If political pressures force one to go the route of industrial targeting, then it is important to remember never to target individual firms. These firms will likely first use the acquired government resources to kill the competition at home. It is much better to provide support that aids all firms in the industry (Porter 1998). China's investments in port facilities are a great example of this. Another is India's NASSCOM, an information technologies clearing house for business information that is inexpensively supported by India's government and has been helpful in advancing best business practices. This is an important message at a time when the federal government and the province of Ontario are being pressured to subsidize auto firms: *Support the industry, not individual firms.*

Several U.S. states have toyed with legislation that prevents offshoring of services in government contracts. Such procurement restrictions might make sense for technologically sensitive activities such as defence. But they rarely make sense elsewhere as they raise the costs of providing government services.

Reactive Policies That May Help

Product market policies: (i) better protection of Canadian intellectual property from abuse by foreign manufacturers; and (ii) better enforcement of health and safety compliance for foreign goods sold in Canada

The integration of China and India into the world economy could never have happened without the easy transfer of OECD know-how to these countries. There is nothing Canada can do to prevent the flow of technology to China and India from other OECD countries. This is a fact, not a Canadian policy option.

Can anything else be done? At the heart of the issue is what economists call an externality. It is the gap between the private gains to firms and the public losses to Canadians from selling technologies abroad. The appropriate response to an externality is a tax that forces firms to internalize the difference between these private gains and public losses. A tobacco tax would be an example of this in the health sphere. Gomory's (2007) congressional testimony advocates the use of taxes and subsidies to prevent firms from transferring technology when relocating to China. This is a very intriguing idea though I reserve judgment until the details are worked out.

There is also an alternative solution to the technology transfer problem. Knowledge is not like other products: once out of the bag, it can be used by just about anyone with the capacity to understand it. In OECD countries, we address this problem with patents that prevent anyone but the assignee from using the idea. Unfortunately, there is almost no patent protection for goods produced in China using Canadian ideas. At the Rotman School of Management, we routinely hear complaints about this from Canadian businesses. For example, Les Mandelbaum, president of Umbra Furniture, saw Chinese knock-offs of his chairs in Home Depot even before Umbra had started producing them. It is obvious to the most casual observer that knock-offs of original Canadian products will be sold illegally in China and there is nothing realistically that we can do about it. However, when Chinese knock-offs are sold in OECD countries, there is something that Canada can do. *Canada and other OECD countries should move to improve enforcement of OECD patents as they apply to goods shipped from China to other OECD countries.*

Another issue that is rightfully of concern is the health and safety of goods produced in those low-wage countries where health and safety regulations and compliance are weak or non-existent. A fundamental role for government is the regulation of health and safety. We must

screen imports so that lead paints do not appear in our children's toys, so that food additives are reported on our product labels, and so that unapproved electrical equipment disappears from our shops. While monitoring products at the border is expensive, there are other options available that are admittedly radical. First, the government can fund consumer advocacy groups that monitor factories in China and India and provide a seal of approval to factories that meet accepted standards. These standards could be worked out in conjunction with the Canadian government. Note that the World Trade Organization (WTO) has been very clear that it looks favourably upon such certification systems.[4] Second, the government can support civil suits by Canadian consumers against Canadian producers that fail to monitor what their Chinese and Indian suppliers are doing. It will seem odd to punish Canadian firms for the wrongdoing of foreigners. However, civil suits will raise the cost of doing business with Chinese suppliers and these costs will be passed on by Canadian firms to their customers. Consumers will be happier because it is apparent from media reports that they would gladly pay extra for products they know to be safe. Over time, producers will also be happy because the policy will force Chinese manufacturers to incur the same health and safety costs as Canadian producers, thus levelling the playing field. Canada should be more aggressive in enforcing health and safety standards on goods produced in low-wage countries and enforcement need not be expensive to implement.

LABOUR MARKET POLICIES: (I) CONTINUED SUPPORT FOR OUR HEALTH CARE SYSTEM; (II) INCREASED PORTABILITY OF PENSIONS; AND (III) SUPPORT FOR VOLUNTARY LABELLING THAT PROVIDES INFORMATION TO CONSUMERS ABOUT THE LABOUR STANDARDS USED TO PRODUCE FOREIGN GOODS

Globalization has given many commentators the sense that there is greater churning in the labour market than in the past. That is, international trade is forcing workers to switch jobs more frequently and spend more time unemployed. While this view is less than fully supported by the evidence reported above, the most obvious policy for helping workers displaced by offshore outsourcing is trade adjustment assistance (TAA). Unfortunately, TAA programs have a long history of failure (Baicker and Rehavi 2004). Given this, we do recommend redesigning unemployment insurance for workers displaced by international trade. Any changes to unemployment insurance should take the form of increased eligibility (especially in hard-hit Ontario where eligibility requirements are tougher than the national average) and possibly increased benefits.

In their conference submission, Gomez and Gunderson (2009) offer a profound insight into why TAA programs may not work for workers in the service sector. Much of the displacement associated with offshore outsourcing of services involves workers who are skilled, well-paid and employed in a growing industry. These are workers who are invariably quick to find new jobs. We should not be re-designing unemployment insurance for this group.

In the United States, a lot is made about the interaction of job churning with medical insurance. When a worker loses his or her job, medical insurance can lapse. Fortunately, the Canadian health care insurance model provides us with an important competitive advantage. It makes it easier on displaced workers who need not worry about medical insurance and it makes it easier on firms who need not worry about the costs of medical care. But the same cannot be said about pensions. The lack of pension portability in Canada makes it costly for workers to move to where the jobs are. Lack of pension portability should be considered a competitive disadvantage and must be addressed accordingly.

There is a concern about the effects of offshore outsourcing on inequality. This issue has been studied extensively over the past 20 years and all the evidence indicates that international trade is at most a minor contributor to inequality. No policy response is recommended.[5]

Labour standards are a final labour-market issue of great concern to Canadians. Canada could threaten China and India with embargos if labour standards are not met. However, past experience suggests that Canada and other OECD countries are not prepared to engage China by going this route. A different route — one endorsed by the WTO — is labelling. We could assist NGO watchdogs with programs that label goods according to the labour standards used in their production.

PUBLIC EDUCATION ABOUT THE BENEFITS OF OFFSHORE OUTSOURCING

The public is ambivalent about offshore outsourcing, sometimes seeing its benefits and sometimes fixating only on its costs. The public must be reminded about the three key benefits of offshore outsourcing: lower prices, higher incomes and global poverty alleviation. I tackle each of these in turn.

Consumers see their Big Box stores filled with everything from Chinese chairs to Chinese-assembled consumer electronics. They buy these goods and then lament the lost jobs. Since televisions have not been produced in Canada for more than a decade, the price reduction has not cost a single Canadian his or her job. Yet a sales tax cut, for

example, plays better with the public than offshore outsourcing. The government needs to do a better job of explaining this issue.

Second, Canadians do not understand how their incomes, which are driven by their productivity, have benefited from global competition. Several studies have identified productivity gains from outsourcing (see Mann [2003] and Amiti and Wei [2006]). My own work has shown how NAFTA increased Canadian manufacturing productivity by 11 percent (see Trefler [2004*a*] and Lileeva and Trefler [2007]). Canada's repatriated earnings from the offshore activities of Canadian corporations rose a spectacular $18 billion between 2003 and 2006. This accounted for one tenth of our GDP growth over the same period. Offshore outsourcing is part of the solution to improved productivity and prosperity. Survey research demonstrates that Canadians understand that improved productivity is essential to our long-term well-being, but they need to be reminded of it repeatedly (Ontario Task Force on Competitiveness, Productivity and Economic Progress 2007*b*).

Third, the Canadian public entirely disregards the great human success story that is unfolding in some of the poorest parts of Asia. Literally hundreds of millions of people are being lifted out of poverty and integrated into a higher-paying world market economy. We profess in Canada to cherish core values of community and caring. These values do not stop at the border. Yet we do more to alleviate world poverty through our trade relations with China and India than we do through the various government aid programs and our world-class support of immigration (see, for example, Helpman [2004, chap. 6]). Offshore outsourcing is the real humanitarian success story of the last two decades. Yet because it happens beyond our borders, we have ignored this spectacular achievement. We should be proud that we are an integral part of this.

Proactive Policies for Sustained, Innovation-Based, Competitive Advantage

While the policies described above are sensible, they will not have major long-term effects as they are reactive rather than proactive. They fail to address the core issue — how to make Canada more competitive than China and India in the long run. This section discusses the right set of proactive policies.

HELPING PEOPLE INVEST IN THEMSELVES

A significant part of Canada's excellent performance in international rankings of business attractiveness is attributable to the educational attainment of our workforce. It is crucial that Canada continue to invest in all levels of education, from pre-school to post-secondary. No single policy has greater effectiveness in meeting our competitiveness challenges. Every single commentator on offshore outsourcing ranks investing in education as one of the very best possible policies; no other policy receives anywhere near this unanimous support. See Berger (2006), Blinder (2006) and Trefler (2005, 2006) for academic support; Brainard and Litan (2005) of the Brookings Institution and Gomory (2007) (a former Director of Research at IBM) for submissions to the U.S. Congress; and the Canadian Chamber of Commerce (2005), Baily (2007) of McKinsey Global Institute and Roach (2006) of Morgan Stanley & Co. for business-sector support. Coincidentally but importantly, investing in education also provides touchstones with many of the social issues facing our country.

Every single commentator on offshore outsourcing ranks investing in education as one of the very best possible policies; no other policy receives anywhere near this unanimous support.

Much of the current debate about education in an offshore outsourcing context comes from the large supply of Chinese and Indian engineering graduates. However, Ashish Arora (2009) at our conference and McKinsey Global Institute (2005) both warn that these numbers are inflated and, while they represent a real competitive challenge, the concerns are overstated. Arora points out that the Indian expansion of engineering enrolment has come at a heavy cost in terms of quality. McKinsey adds that only one in four engineers from India have the skills needed for success in the global workplace.

The panic about Chinese and Indian engineering graduates has, I believe, the potential to undermine our education system in two ways. First, we must remember that education is not just about university engineering degrees. We must not lose sight of the importance of decades of research proving that investments in education that start as early as pre-school yield envious long-term rates of return. See Heckman and Carneiro (2003) for economic evidence — Heckman is a Nobel Prize winner — and Trefler (2004*b*) for a review of the hard science. We must also not lose sight of the fact that the supply of qualified teenagers who want a university degree depends on the

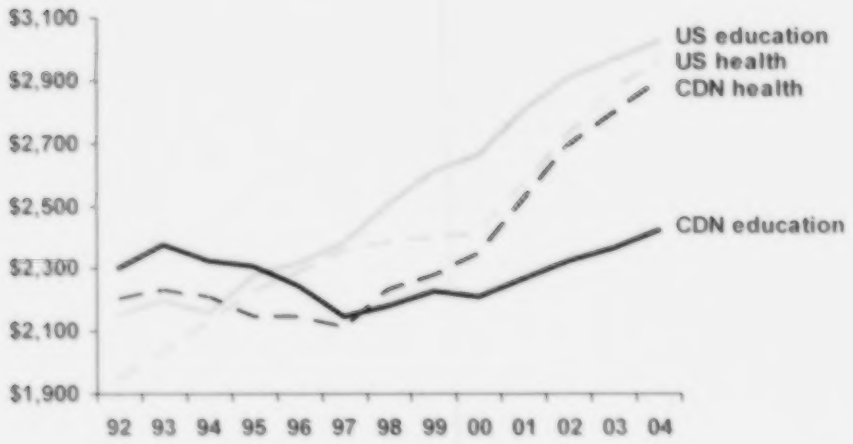
investments we make in these teens before university. Being ready for university is a continuous process of positive reinforcements that starts with being "ready to learn" in grade one, continues with proficiency in the "New Basic Skills" in grade twelve and CEGEP, and ends with the desire and ability to complete a post-secondary degree.

Second, we must not lose sight of the fact that engineering degrees are not the only economically important degrees. In terms of sheer number of jobs, most of the opportunities in the future will involve face-to-face communication with customers (Blinder 2006). This point is reinforced by the conference contribution by Head, Mayer and Ries (2009). They show that even though we live in an increasingly global world, most transactions remain local because businesses communicate best when they can interact regularly in the same room. In terms of skill shortages caused by offshoring, both the Ontario Task Force on Competitiveness, Productivity and Economic Progress (2005) and Baily (2007) point to shortages of middle-management skills within global companies.

It is essential that we debunk the myth that Canada is committed to funding all levels of education. Consider Figure 1. The solid lines are Canadian and U.S. public expenditures on education per capita. In 1992, Canada spent more than the United States. Since then, Canadian expenditures have been roughly flat whereas U.S. expenditures have risen by 40 percent. Then there is the surge in private U.S. educational expenditures. Combining public and private expenditures, Massachusetts now spend three times more than Ontario on post-secondary education. One excuse in Canada is that budget resources have been eaten up by health care spending. Yet the United States has been raising public health care spending at least as fast as Canada (dashed lines in Figure 1).

FIGURE 1

EDUCATION AND HEALTH SPENDING PER CAPITA BY ALL LEVELS OF GOVERNMENT



Source: Ontario Task Force on Competitiveness, Productivity and Economic Progress (2007a).

These numbers hit hard at all levels. Our high schools are underfunded and our first-class international status in post-secondary educational attainment is based on the less expensive alternative of community colleges. Only 22 percent of our population aged 15–64 has a university degree, compared with 30 percent in the United States (OECD 2006). In short, under-funding of public education is leaving too many of our young adults with a deficient skill set that makes them perfect targets for low-wage competition. Canadian governments need to invest in all levels of public education in order to improve the innovative capacity of our future workers.

HELPING FIRMS INVEST IN ENHANCED INNOVATIVE CAPACITY

Just as individuals must be encouraged to invest in their future innovative capacity, so too must firms.

Investment incentives

Investment by China and India is proceeding at extraordinary rates compared with Canada. The Chinese government invests close to 10 percent of GDP in infrastructure projects, far in excess of Canada. Furthermore, Canadian business is investing at dismal rates. Over the highly profitable 2002–2007 period, investment has been stagnant: Canadian businesses are using profits to retire debt and pay dividends rather than to invest in machinery, equipment and innovation. See International Monetary Fund (2007). Of particular importance, Canada lags dramatically in ICT investments. For every dollar spent on ICT by U.S. firms, Canadian firms spent only 70 cents.

Canada has a large number of tax policies that discourage investment. Our effective marginal tax rate on capital is the third highest in the OECD. (Fortunately for Canada, the United States is second highest.) Provincial capital taxes, Ontario's provincial sales taxes (which generates 40 percent of its revenues from taxes on intermediate goods such as capital purchases), slow federal and provincial rates of tax depreciation on equipment, and a decision to lower consumption taxes rather than investment taxes all contribute to unacceptably high marginal rates of tax on capital. The result is that Canadian firms are using much more labour-intensive production techniques than their U.S. counterparts.

Increasing the size of the market in which Canadian firms operate

A core principal of economics is that investment rates are higher in larger markets. New products, processes and machines involve fixed costs to develop and/or purchase. The larger the market in which the firm operates, the lower these fixed costs are relative to sales. Thus a larger market size encourages higher rates of investment. This encouragement translates into significantly higher rates of investment in new product development and advanced manufacturing technologies. This phenomenon has been documented in a Canadian context by Lileeva and Trefler (2007).

The most obvious way to increase the market size faced by Canadian firms is to reduce barriers to interprovincial trade. Economists have been telling policy makers this for many years. Yet as

Advantage Canada points out, so much remains to be done. A second way of increasing market size is to continue pressing hard on creating a truly North American space. This point was expanded on by Wendy Dobson in comments during the conference. A third way is to more actively promote market access agreements with the European Union and Korea. A final way of attaining a larger market is to obtain improved access to China and India in core areas of Canadian strength such as insurance, pension management, engineering and education.

Subsidies for innovation and the retention of knowledge workers

As the OECD (2007) notes, older policies to foster innovation such as subsidies and procurement are being replaced with newer policies such as R&D tax relief and reinforcement of industry-science linkages. Over and above familiar issues of innovation policy, the phenomenon of offshore outsourcing raises two new issues related to the management of knowledge workers. First, as the firm outsources various activities and focuses on its narrower core competencies, it is also inadvertently outsourcing the breadth of its engineering expertise. Berger (2006) argues that this is an extremely important and negative development for the future of OECD competitiveness. To maintain a competitive edge, firms must invest in "excess innovation-related capacity" so that they will be able to advance rapidly into evolving lines of business. The excess capacity takes several forms: retaining engineers and scientists even after their functions have been outsourced; devoting more resources to longer-term product development projects that might one day offer new business opportunities; and building more local workforce skills than are currently needed (as RIM has done around Waterloo). Tax incentives for retaining R&D personnel would promote each of these objectives. However, current R&D subsidies may not be properly structured for this purpose. One reason is that they focus on formal R&D involving a laboratory and white-coated technicians. Another reason is that they may not be very useful to U.S.-based multinationals because they can be clawed back by the U.S. government in certain circumstances. Opportunities to improve the structure of Canada's R&D tax incentives should be investigated.

Second, in their submission to the conference, Gomez and Gunderson (2009) provide evidence that newly minted graduates who are laid off due to a recession typically have permanently lower earnings. The reason seems to be that these graduates end up with permanently lower on-the-job training and so earn less. This strongly suggests that we need policies in place that encourage firms to keep a long-term view of investing in their workers. In the context of R&D, it

means that we must encourage firms to retain young knowledge workers even during a downturn. This suggests that R&D subsidies should be countercyclical in order to smooth the strong correlation of R&D expenditures with business cycles.

Infrastructure investments

There are other more mundane infrastructure investments that are needed. Delays at the U.S. border must be reduced, a West Coast port should be built, and telecommunications infrastructure must be improved on an on-going basis.

Conclusions

The Executive Summary above provided a synopsis of the arguments and policy recommendations reported in this brief. They will not be repeated here. As emphasized, the real threat from China and India will come only after they have crossed the innovation tipping point, i.e., when they are able to develop their own new products and processes. This will not happen for at least 15–20 years. We can either spend the next two decades doing nothing while waiting to see whether such a global shift in innovation toward China and India actually happens, or we can recognize that Canada's tenuous position as a world-class innovator has been steadily eroding and a global innovation shift toward China and India would only accelerate the process. The choice is clear. We must address our long-term innovation deficit with a focused, long-term response aimed at re-establishing Canada as one of the top-10 world leaders in innovation and knowledge creation. The best way forward is a set of proactive policies that encourage people and firms to invest in their future innovative capacities.

ENDNOTES

[1] Forrester Research's exaggerated guesstimate of 3.3 million American workers by 2015 or 250,000 a year amounts to a tiny 1.7 percent of the 15 million Americans who involuntarily lose their jobs each year. See Brainard and Litan (2005). See also Gaston and Trefler (1994, 1997) for earlier research on the labour market impacts of international trade.

[2] Danielle Goldfarb of the Conference Board of Canada provides a specific example: a $300 IPod 30GB that ships from China to Canada contains less than $15 of parts made in China and requires very little labour to assemble.

[3] Suppose a $100 Chinese good is produced with $50 of local inputs (labour and steel) and $50 of imported intermediates. A revaluation does not affect imported intermediates since these are bought and sold in dollars. A 40 percent revaluation would thus raise costs to $50 + ($50 x 1.40) = $120 or 20 percent. If, more realistically, only a third of the cost went to pay Chinese factors of production, then costs would rise to only $67 + ($33 x 1.40) = $113 or 13 percent. Similar numbers are reported by McKinsey Global Institute and the Boston Consulting Group.

[4] While I have not discussed whether any of the other policies recommended in this brief are WTO-consistent, I am confident that they all are.

[5] The rise in the earnings of skilled workers relative to unskilled workers is one form of inequality. It is a hard fact among academic economists that this rise has not been driven by international trade (see, for example, Feenstra and Hanson [1996]). The rise in capital's share of national income and the corresponding decline in labour's share is another form of inequality that the media is convinced is happening. It is not. A recent Industry Canada report demonstrates that labour's share of national income today is exactly where it was in the 1960s. The same is true in the United States.

REFERENCES

Amiti, Mary, and Shang-Jin Wei. 2006. "Service Offshoring and Productivity: Evidence from the United States." NBER Working Paper No. 11926.

Arora, Ashish. 2009. "The Indian Software Industry and Its Future Prospects." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management.
Available from: www.rotman.utoronto.ca/index.html.

Arora, Ashish, and Alfonso Gambardella. 2005. "The Globalization of the Software Industry: Perspectives and Opportunities for Developed and Developing Countries." In: Innovation Policy and the Economy, Vol. 5, edited by Adam B. Jaffe et al. Boston: MIT Press.

Baicker, Katherine, and M. Marit Rehavi. 2004. "Policy Watch: Trade Adjustment Assistance." Journal of Economic Perspectives 18(2): 239-255.

Baily, Martin. 2007. "The Emerging Global Labor Market." Global Sourcing Forum, Toronto (April 10).

Berger, Suzanne. 2006. How We Compete: What Companies around the World Are Doing to Make It in Today's Global Economy. New York: Doubleday.

Blinder, Alan. 2006. "Offshoring: The Next Industrial Revolution." Foreign Affairs 85(2): [n.p.]

Boyer, Marcel. 2009. "The Design of Efficient Offshoring Strategy: Some Reflections with Links to SNC-Lavalin." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.

Brainard, Lael, and Robert E. Litan. 2005. "Services Offshoring, American Jobs, and the Global Economy." Perspectives on Work. Brookings Institution, Winter 2005.

Brandt, Loren, and Johannes van Biesebroeck. 2009. "Capability Building in China's Auto Supply Chain." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.

Canadian Chamber of Commerce. 2005. Offshore Outsourcing: Opportunities and Challenges for the Canadian Economy. Ottawa: The Chamber.

D'Cruz, Joseph. 2009. "Osellus Inc. Multi-shore Outsourcing." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management.
Available from: www.rotman.utoronto.ca/index.html.

D'Cruz, Joseph. 2009. "Sapient Corporation: Delivering Solutions with an Onshore-Offshore Approach." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.

Dobson, Wendy. 2006a. "China's Economic Transformation: Global and Canadian Implications." International Journal 61(2): [n.p.]

———. 2006b. "Financial Reforms in China and India: A Comparative Analysis." Rotman School of Management, University of Toronto.

Dobson, Wendy, and Anil Kashyap. 2006. "The Contradiction in China's Gradualist Banking Reforms." In: Brookings Papers on Economic Activity 2: 2006, edited by George L. Perry and William C. Brainard. Washington, DC: Brookings Institute Press, 2007.

Feenstra, Robert C., and Gordon H. Hanson. 1996. "Globalization, Outsourcing, and Wage Inequality." American Economic Review Papers and Proceedings 86(2): 240-245.

Feinberg, Susan, and Michael Keane. 2009. "The Offshoring Strategies of US MNCs Operating in Canada." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.

Gaston, Noel, and Daniel Trefler. 1994. "Protection, Trade, and Wages: Evidence from U.S. Manufacturing." Industrial and Labour Relations Review 47(4): 574-593.

———. 1997. "The Labour Market Consequences of the Canada–U.S. Free Trade Agreement." Canadian Journal of Economics 30(1): 18-41.

Girma, Sourafel, Yundan Gong, Holger Görg and Zhihong Yu. 2007. "Can Production Subsidies Explain China's Export Performance? Evidence from Firm Level Data." Manuscript, University of Nottingham.

Gomez, Rafael, and Morley Gunderson. 2009. "Labour Adjustment Implications of Offshoring of Business Services." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.

Gomory, Ralph E. 2007. Testimony to the Committee on Science and Technology, U.S. House of Representatives, June 12.

Head, Keith, Thierry Mayer and John Ries. 2009. "Does Distance Protect Canadian Workers from Offshoring?" Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.

Heckman, James, and Pedro Carneiro. 2003. "Human Capital Policy." NBER Working Paper No. 9495.

Helliwell, John F. 2009. "Are Offshoring and Immigration Substitutes for Canada?" Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management.
Available from: www.rotman.utoronto.ca/index.html.

Helpman, Elhanan. 2004. The Mystery of Economic Growth. Cambridge, MA: Belknap Press of Harvard University Press.

Helpman, Elhanan, ed. [Forthcoming] Institutions and Economic Performance. Cambridge, MA: Harvard University Press.

Helpman, Elhanan, and Daniel Trefler. 2009. "The New World Division of Labour." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management.
Available from: www.rotman.utoronto.ca/index.html.

International Monetary Fund. 2007. Canada: 2007 Article IV Consultation—Staff Report. IMF Country Report No. 07/51. Washington, DC: IMF, February.

Isgut, Alberto. 2009. "The Effect of Imports from China on Canada's Labour Markets: Your Wages Are Not Set in Beijing." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.

Lileeva, Alla, and Daniel Trefler. 2007. "Improved Access to Foreign Markets Raises Plant-Level Productivity ... for Some Plants." NBER Working Paper No. 13297.

Liu, Runjuan, and Daniel Trefler. 2006. "The Impact of Service Offshoring and Inshoring on the U.S. Labor Market." Paper presented at the "Offshore Outsourcing: Capitalizing on Lessons Learned," conference at the Rotman School of Management, Toronto, October 26–27, 2006. Conference sponsored by Industry Canada and the Rotman School of Management.

Mann, Catherine. 2003. "Globalization of IT Services and White Collar Jobs: The Next Wave of Productivity Growth." Policy Brief PBO 3–11. Washington, DC: Institute for International Economics, December.

McKinsey Global Institute. 2005. The Emerging Global Labor Market. MGI Report. [n.p.]: June.

Morissette, René, and Anick Johnson. 2009. "Offshoring and Employment in Canada: Some Basic Facts." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.

Ontario Task Force on Competitiveness, Productivity and Economic Progress. 2005. Rebalancing Priorities for Prosperity. Fourth Annual Report. Toronto: Task Force.

———. 2007a. Agenda for Canada's Prosperity. Toronto: Task Force.

———. 2007b. Path to the 2020 Prosperity Agenda. Sixth Annual Report. Toronto: Task Force.

OECD. 2006. Education at a Glance: OECD Indicators. 2006 ed. Paris: OECD.

———. 2007. OECD Science, Technology and Industry Scoreboard 2007. Paris: OECD.

Porter, Michael E. 1998. "The Competitive Advantage of Nations." In: On Competition, edited by Michael E. Porter. Cambridge, MA: Harvard Business School Publishing.

Roach, Stephen S. 2006. "Perils of a New Globalization." Morgan Stanley Equity Research, March.

Samuelson, Paul A. 2004. "Where Ricardo and Mill Rebut and Confirm Arguments of Mainstream Economists Supporting Globalization." Journal of Economic Perspectives 18(3): 135-146.

Sturgeon, Timothy, Johannes van Biesebroeck and Gary Gereffi. 2007. "Prospects for Canada in the NAFTA Automotive Industry: A Global Value Chain Analysis." Paper prepared for Industry Canada, March 2007.

Trefler, Daniel. 2004a. "The Long and Short of the Canada-U.S. Free Trade Agreement." American Economics Review 94(4): 870-895.

———. 2004b. "Looking Back: How Childhood Experiences Impact a Nation's Wealth." Rotman Magazine Spring/Summer: 12-16.

———. 2005. "Policy Responses to the New Offshoring: Think Globally, Invest Locally." Paper prepared for an Industry Canada Roundtable on Offshoring, held in Ottawa on March 30, 2005. Revised version published as Industry Canada Working Paper No. 2006-01. Ottawa: Industry Canada.

———. 2006. "Service Offshoring: Threats and Opportunities." In: Brookings Trade Forum: 2005 – Offshoring White-Collar Work, edited by Susan M. Collins and Lael Brainard. Washington, DC: Brookings Institution Press.

Van Biesebroeck, Johannes, and Lijun Zhang. 2009. "Outsourcing Multiple Parts to Many Countries: An Application to the Automotive Industry." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management.
Available from: www.rotman.utoronto.ca/index.html.

Whalley, John. 2009. "China and Outsourcing." Proceedings of the conference, "Offshore Outsourcing: Capitalizing on Lessons Learned," at the Rotman School of Management, Toronto, October 26–27, 2006. Edited by Daniel Trefler. Conference sponsored by Industry Canada and the Rotman School of Management. Available from: www.rotman.utoronto.ca/index.html.